NEW HAMPSHIRE OEP OFFICE OF ENERGY AND PLANNING

Flood Lines

New Hampshire's Floodplain Management Newsletter

Winter 2009 Volume III, Issue II

Inside this issue:

What's New?

National Flood Safety Awareness Week - March 16-20, 2009

March 16 to 20, 2009 is National Flood Safety Awareness Week. The National Weather Service (NWS) started the campaign in 2005 as a way to highlight some of the many ways floods can occur, the hazards associated with floods, and what you can do to save life and property.

The NWS provides various sources of data, information, and educational material that communities and residents can use to prepare and protect themselves and property from flooding. The Advanced Hydrologic Prediction Service provides river and flood forecasting and water information. The Turn Around, Don't Drown™ campaign warns people of the hazards of walking or driving a vehicle through flood waters. Information and data on inland flooding, droughts, snowmelt flooding (see page 7 of this newsletter), ice jams and debris flow are also available.

To learn more about the NWS's data and information, FEMA Region 1's recent press releases and public service announcements on New England spring flooding, and information about flood insurance please go to: www.nh.gov/oep/programs/floodplainmanagement/floodawareweek.htm

NH Department of Environmental Services - Alteration of Terrain Program Changes - New 100-Year Floodplain Requirements

Effective January 1, 2009, changes were made to the NH Department of Environmental Services' Alteration of Terrain regulations. Now projects within the 100-year floodplain require the applicant to submit a supplementary report that must include various information. One source of information that is required is a study to determine the 100-year floodplain elevations and boundaries for Zone A areas which currently do not have floodplain elevations determined. Also, for any project where the total fill volume is greater than 0.5 acre-feet or where a bridge or culvert crossing is proposed, a hydraulic model (HEC-RAS) model and analysis is required. For more information about the Alteration of Terrain Program and the new requirements for projects within the 100-year Floodplain, see Chapter Env-Wq 1503.09 at: http://des.nh.gov/organization/divisions/water/aot/index.htm

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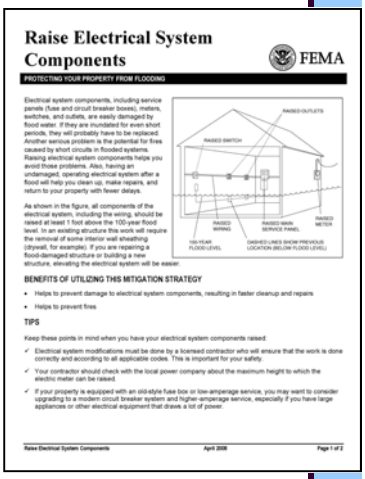
NFIP Update

Protecting Your Property from Flooding

FEMA has published a series of "how-to" design guides for applying flood-protection measures to electrical systems, physical structure, and exterior walls.

These guides include *Add Waterproof Veneer to Exterior Walls*; *Anchor Fuel Tanks*; *Build with Flood-Resistant Materials*; *Dry Floodproof Your Building; Install Sewer Backflow Valves*; *Protect Wells From Contamination by Flooding; Raise Electrical System Components*; and *Raise or Floodproof HVAC Equipment.*

These 2-page guides are available for viewing and downloading from FEMA's web site. Please go to: http://www.fema.gov/library/viewRecord.do?id=3262


Raise Electrical System Components

FEMA

PROTECTING YOUR PROPERTY FROM FLOODING

Electrical system components, including service panels (fuse and circuit breaker boxes), meters, switches, and outlets, are easily damaged by flood water. If they are inundated for even short periods, they will probably have to be replaced. Another serious problem is the potential for fires caused by short circuits in flooded systems. Raising electrical system components helps you avoid those problems. Also, having an undamaged, operating electrical system after a flood will help you clean up, make repairs, and return to your property with fewer delays.

As shown in the figure, all components of the electrical system, including the wiring, should be raised at least 1 foot above the 100-year flood level. In an existing structure this work will require the removal of some interior wall sheathing (drywall, for example). If you are repairing a flood-damaged structure or building a new structure, elevating the electrical system will be easier.

BENEFITS OF UTILIZING THIS MITIGATION STRATEGY

- Helps to prevent damage to electrical system components, resulting in faster cleanup and repairs
- Helps to prevent fires

TIPS

Keep these points in mind when you have your electrical system components raised:

- ✓ Electrical system modifications must be done by a licensed contractor who will ensure that the work is done correctly and according to all applicable codes. This is important for your safety.
- ✓ Your contractor should check with the local power company about the maximum height to which the electric meter can be raised.
- ✓ If your property is equipped with an old-style fuse box or low-amperage service, you may want to consider upgrading to a modern circuit breaker system and higher-amperage service, especially if you have large appliances or other electrical equipment that draws a lot of power.

Raise Electrical System Components April 2008 Page 1 of 2

Mapping Update

Hillsborough and Merrimack Counties Floodplain Maps

The latest update from FEMA officials is they anticipate sending letters (called a Letter of Final Determination) to communities this spring for Hillsborough County and this summer for Merrimack County. Once the letter is issued, the community's governing body will then have six months to adopt the new maps before they become effective. OEP will be contacting communities when the letters are issued to guide them through the process.

The following is the current anticipated schedule for Hillsborough and Merrimack counties. Please note these dates are subject to change.

Letter of Final Determination sent by FEMA to Communities:

- Hillsborough - End of March 2009
- Merrimack - June 2009

Anticipated Map Effective Date:

- Hillsborough - End of September 2009
- Merrimack - December 2009

Flood Insurance Update

Spring is coming — Are you prepared?

Spring is coming and potentially so are the floods. Over the last few years, many New Hampshire residents have suffered property damage due to spring flooding. If you live in or near a floodplain area, be **FloodSmart** and purchase a flood insurance policy. You'll need to take action soon since there is a 30-day waiting period (some exceptions do apply) before a flood insurance policy goes into effect.

For more information, talk to your insurance agent or contact FEMA's FloodSmart at www.floodsmart.gov or 1-888-379-9531.

FloodSmart.gov
The official site of the NFIP

Number of Flood Insurance Polices in NH by County (2/28/2009)	
Belknap	323
Carroll	499
Cheshire	517
Coos	176
Grafton	897
Hillsborough	1,270
Merrimack	593
Rockingham	3,680
Strafford	444
Sullivan	170
State Total	8,568

Upcoming Events and Training

Determining Substantial Damage and Improvement Workshop

OEP and FEMA will be holding a training workshop for local community officials on Wednesday, **March 18, 2009** from **9 AM to 3 PM** at the NH Local Government Center, 25 Triangle Park Drive in **Concord**.

The purpose of the workshop is to provide guidance to local community officials on how to make determinations in regards to substantial damage and improvements to structures located in a special flood hazard area. A community is responsible for making these determinations if it participates in the National Flood Insurance Program. Many community officials were faced with making these determinations following the 2006 and 2007 flood events and the 2008 tornado. This workshop will give local community officials the tools they need to be ready for the next disaster.

For more information, directions, and to register for this workshop, please go to http://www.nh.gov/oep/programs/floodplainmanagement/education_and_training.htm

Floodplain Regulations Session at OEP Spring Planning & Zoning Conference

A session on Floodplain Regulations will be held at the OEP 16th Annual Spring Planning and Zoning Conference on Saturday, **May 2, 2009 in Manchester** from 2:15 to 3:30 PM. This session will include a discussion of the regulations that a community must adopt and enforce to be a participating community of the National Flood Insurance Program. Some of the topics will include permitting floodplain development, building standards, subdivision requirements, and variances. Discussion will also include typical compliance problems and the floodplain requirements in the state building code.

For more information about the conference and registration, please go to: http://www.nh.gov/oep/events/spring_conference/index.htm

National Flood Conference

The 26th annual National Flood Conference will be held on **April 19 to 22, 2009 in Boston**. The conference is held to motivate, educate and train others on the benefits of flood insurance and related floodplain management topics.

Representatives attend from the insurance industry, lending institutions, flood zone determination companies, software vendors, mapping and geographic technology companies, academia, consultants, claims adjusters and federal, state, and local government agencies.

For more information about the workshops, registration fees (**Early Bird registration ends March 6**), and hotels, please visit the web site at: http://www.nfipbureau.fema.gov/NFC_Webpage_122208.html.

Please note that the Boston Marathon will be held during the conference on April 20, 2009, which may impact hotel and parking availability on that day.

Workshop for Local Community Officials on Determining Substantial Damage and Improvement will be held on March 18, 2009 from 9 AM to 3 PM in Concord

NFC 2009 BOSTON
REVOLUTIONIZING THE NFIP

NFIP Feature Topic: *Moving to Digital Flood Hazard Information*

Since the 1970's, the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP) has provided flood hazard maps and reports to help more than 20,000 participating communities manage and reduce risks. FEMA currently distributes both paper and digital flood hazard maps and reports.

Beginning on October 1, 2009, customers may order only digital flood hazard maps and reports. FEMA's Map Service Center (MSC) will not produce or distribute paper Flood Insurance Rate Maps (FIRMs), Flood Hazard Boundary Maps (FHBMs), or Flood Insurance Study (FIS) reports on or after this date, other than a single paper copy provided to communities when their maps are updated. Users of paper maps should start planning to make a transition to digital flood hazard maps and reports now.

If You Use Paper Maps Now, FIRM Scans and FIRMettes Are the Simplest Way to Use Digital Maps

The simplest digital maps to use are digital pictures of FEMA's paper maps. FEMA's entire map inventory, both current and historical maps, is available.

A FIRM Scan is a picture of a whole map. FIRM Scans are available by download and on CDs and DVDs. Because a FIRM Scan is a picture of a whole map sheet, you need a specialized large-format printer to create a paper copy.

For those who print on smaller paper sizes, FEMA provides tools that allow users to create an individualized flood map called a "FIRMette." FIRMettes are portions of FIRM Scan images formatted to fit on printers commonly found in offices. You can make FIRMettes of any map in the FEMA inventory online using the *FIRMette – Web* tool. For those who prefer to work offline, FEMA also provides a *FIRMette – Desktop* tool that makes FIRMettes from FIRM Scan data that you have copied to your computer.

See the MSC web site at http://msc.fema.gov to access the FIRM Scan data, FIRMette tools, and related instructions.

As with paper flood hazard maps, remember to check for Letters of Map Change (LOMCs) that provide updates to the FIRM Scans and FIRMettes. These are listed in the MSC catalog for each FIRM Scan.

FEMA Publishes Other Digital Maps That Offer More Flexibility and Power

In addition to FIRM Scans and FIRMettes, FEMA provides map data and tools with which users experienced with computer mapping systems can create custom maps or use with their own map data. These range from online map viewers that will be familiar to those who use Internet mapping sites to data and services used with specialized Geographic Information System (GIS) software. These products provide flexibility and support sophisticated uses. Some contain updates from LOMCs. Table 1 on the next page describes these products and tools. See the MSC web site at http://msc.fema.gov for more information.

If you have questions or comments about this change, please email: FEMA MapSpecialist@mapmodteam.com.

General Distribution of FEMA's Paper Maps and Studies to End on October 1, 2009

A single paper copy will still be provided to communities when their maps are updated.

This information was taken from FEMA's *Moving to Digital Flood Hazard Information* brochure dated November 2008. To view the complete brochure, please go to:

http://www.fema.gov/library/viewRecord.do?id=3474

Table 1. Summary of FEMA digital flood hazard products and tools, available from the MSC at http://msc.fema.gov.

Digital Flood Hazard Product or Tool	What is it? What does it do?	Available Coverage	What do I need to use it?	Suitable for ...	Learn more
Digital Flood Hazard Maps					
FIRM Scans	Image data that provides a picture of an entire FIRM or FHBM.	Everywhere FEMA has mapped flood hazards.	Software, such as *FIRMette – Desktop* (or *F-MIT*), that lets you view and print TIFF or PNG-formatted image files.	Viewing flood hazard maps, printing your own flood maps for an area of interest.	http://msc.fema.gov. Follow the link "Product Information," and then "NFIP Flood Maps."
Digital Flood Insurance Rate Map (DFIRM) database	The initial flood hazard GIS data for a community or county.	Only where FEMA has modernized maps.	Software, such as *MapViewer – Desktop* or GIS or other mapping software.	Creating custom maps, viewing attribute data, and incorporating flood hazard data into custom software applications.	http://msc.fema.gov. Follow the link "Product Information," and then "DFIRM databases."
National Flood Hazard Layer (NFHL) GIS data	Flood hazard GIS data for a State.	Only where FEMA has modernized maps. Includes changes from Letters of Map Revision (LOMRs).	Software, such as *MapViewer – Desktop* or GIS or other mapping software.	Creating custom maps, viewing attribute data, and incorporating flood hazard data into custom software applications.	A user guide is available at http://www.fema.gov/library/viewRecord.do?id=3291.
NFHL Web Map Service	Web service that makes map overlays and lets users view attribute data from the NFHL.	Only where FEMA has modernized maps. Includes changes from LOMRs, and locations of Letters of Map Amendment (LOMAs) and Lettters of Map Revision Based on Fill (LOMR-Fs).	Internet connection and GIS or other mapping software that lets you use a web map service.	Creating custom maps, viewing attribute data, and incorporating map images of flood hazard data into custom software applications.	A user guide is available at http://www.fema.gov/library/viewRecord.do?id=3292
FEMA-provided Tools for Digital Flood Hazard Maps					
FIRMette – Desktop **(or F-MIT)**	Desktop software to create a map from a portion of a FIRM Scan.	Works with FIRM Scan data on your computer.	FIRM Scan data copied to your desktop and ability to view and print PDF files.	Viewing flood hazard maps and printing an area of interest.	Download the software under "FIRMette - Desktop (F-MIT)" at http://msc.fema.gov. The software includes a tutorial.
FIRMette – Web	Internet software to create a map from a portion of a FIRM Scan.	Everywhere FEMA has mapped flood hazards.	Internet connection, web browser software, and ability to view and print PDF or TIFF files.	Viewing flood hazard maps and printing your own flood maps for an area of interest.	FIRMette tutorial at http://msc.fema.gov
MapViewer – Desktop	Desktop software to make maps and view attribute data.	Works with DFIRM databases and NFHL GIS data on your computer.	DFIRM databases or NFHL GIS data on CD or copied to your desktop.	Viewing custom flood hazard maps and attribute data. Making comments on preliminary DFIRMs.	Download the software under "MapViewer – Desktop (beta)" at http://msc.fema.gov.
MapViewer – Web	Internet software to make maps and reports from the NFHL.	Only where FEMA has modernized maps. Includes changes from LOMRs, and locations of LOMAs and LOMR-Fs.	Internet connection, web browser software, and ability to view and print PDF files.	Creating custom maps and reports, and viewing attribute data.	A user guide is available at http://www.fema.gov/library/viewRecord.do?id=3290.
NFHL Google Earth™ utility (kmz) files "Stay Dry" and "FEMA NFHL"	Files that allow the viewing of the NFHL Web Map Service in Google Earth™.	Works with the NFHL Web Map Service.	kmz files, Internet connection, and Google Earth viewer software.	Quick looks at NFHL flood hazard data. Dynamic visualizations of flood data.	User guides are available at http://www.fema.gov/library/viewRecord.do?id=3289 and http://www.fema.gov/library/viewRecord.do?id=3293
Flood Insurance Study (FIS) Reports					
FIS report file	A book that contains information about flooding in a community. It is developed in conjunction with the FIRM.	Available for most areas. Generally, wherever FEMA has published Base Flood Elevation information.	FIS report file and ability to print and view PDF files.	Reading about the flood study for a community or county and related engineering data.	FIS report tutorial at http://www.fema.gov/plan/prevent/fhm/ot_fisr.shtm

Community Spotlight: *City of Keene*

The City of Keene is located in the southwestern portion of the state in Cheshire County. Keene's estimated 2007 population was 22,834.

Several waterbodies are located in Keene and include the Asheulot River, which runs through the center of the city, Ash Swamp Brook, Beaver Brook, and Otter Brook. Approximately 22 percent of the town's acreage is located in the 100-year floodplain.

Keene joined the NFIP on September 30, 1983. Currently, there are 315 flood insurance policies in Keene. There have been 134 paid losses totaling approximately $3.6 million.

Keene is being recognized because it currently enforces floodplain management regulations and conducts activities that go beyond the NFIP's minimum requirements.

Keene's floodplain regulations are contained in the Natural Resources section of the city's Code of Ordinances. Keene's floodplain regulations contain several standards that exceed the NFIP.

First, the city will not issue a floodplain development permit unless it can be demonstrated to the satisfaction of the city that the project will result in no reduction in the net flood storage capacity of the floodplain. Keene's regulations include very detailed requirements for compensatory floodplain storage.

Keene has been enforcing their compensatory storage requirements since 1990. Compensatory storage was one of several recommendations in the city's adopted 1990 Floodplain Master Plan (http://www.ci.keene.nh.us/planning/masterplans/Floodplainfinal.pdf). The recommendation came from the 1989 study conducted by the U.S. Army Corps of Engineers called *An Evaluation of Compensatory Storage as a Floodplain Management Strategy for the City of Keene.* As stated in the Master Plan, the report "clearly warned that the City was in danger of increased flooding if it did not stop loss of its flood storage capacity."

Second, all new construction, substantial improvements, additions, and manufactured homes must have their lowest floor elevated one foot above 100-year elevation.

Aerial photo of Keene in October 2005

In addition to the floodplain regulations, Keene also conducts activities that promote good floodplain management. These activities include offering a map information service, providing publications on flood insurance, flood protection, and floodplain management at the city's library, preserving open space, maintaining the city's drainage system, and enforcing stormwater management regulations.

Keene residents are rewarded for the city's regulations and activities through FEMA's Community Rating System. Keene is one of five CRS communities in NH and one of the highest ranked CRS communities in NH. As a result, Keene residents receive a 10 percent discount on their flood insurance policies.

To view Keene's floodplain regulations, please see Part II, Chapter 54 - Natural Resources, Article II in their Code of Ordinances document which is available at: www.ci.keene.nh.us.

To Spotlight Your Community

If you would like to spotlight your community for a regulation or a project that goes above and beyond the minimum requirements of the NFIP, please send your information to the mailing address listed under *NFIP Contact Information* on page 7 or email jennifer.gilbert@nh.gov

The Back Page - Snowmelt Flooding

The following information comes from NOAA's National Weather Service (NWS) Flood Safety Program's web site at http://www.floodsafety.noaa.gov/snowmelt.shtml

Q: What is a "snowmelt flood"?

When melting snow is a major source of the water involved in a flood, it is considered a snowmelt flood. Snowpacks store water. Unlike rainfall, which reaches the soil almost immediately, snow stores the water for some time until it melts, delaying the arrival of water at the soil for days, weeks, or even months. Once it does reach the soil, water from snowmelt behaves much as it would if it had come from rain instead of snow - the water either infiltrates into the soil or it runs off (or both). Flooding can occur whenever the rate of water input exceeds the ability of the soil to absorb it or when the amount of water exceeds natural storage capacities in soil, rivers, lakes and reservoirs.

Q: What factors lead to snowmelt flooding?

Six factors typically contribute to snowmelt flooding in Winter and Spring:

- High soil moisture conditions prior to snowmelt.
  - Rainfall during the late Fall is particularly important because there is less evapotranspiration and less time for the soil to drain and dry before it freezes.
- Ground frost or frozen soil
  - Deep, hard ground frost prevents snowmelt from infiltrating into the soil. Cold temperatures prior to heavy snowfall and normal or above normal soil moisture contribute to this.
- Heavy winter snow cover
  - Unseasonably heavy snow cover means there is more water stored and available for snowmelt. Also, when heavy snowcover is widespread, it usually keeps air temperatures cooler and delays spring warming, which increases the potential for more rapid snowmelt and for spring rains occurring with snowmelt. In most parts of the country, the heaviest snowfalls usually occur in late February or March.
- Widespread heavy rains during the melt period
  - Rain at this time contributes more water for flooding. Also, heavy rain can warm up cold snowpacks, causing them to begin melting earlier than they would otherwise. "Rain-on-snow" events are watched carefully for this reason.
- Rapid snow melt
  - Most often, snowmelt is a relatively slow phenomenon. Snowmelt rates are usually comparable to light-moderate rainfall. Important exceptions to this can occur, especially during unusually warm periods with high dewpoint temperatures (humidity), and when nightime temperatures remain above freezing. Snowmelt rates can be much higher than normal under these conditions.
- Ice jams in rivers
  - Snowmelt and the breakup of river ice often occur at about the same time. Ice jams sometimes occur, often in response to higher, fluctuating river flows associated with snowmelt. Ice jams can act as dams on the river that result in flooding.

Q: How do I find out if snowmelt flooding is likely? Are snowmelt floods forecasted?

The National Weather Service provides extensive information about snowpack conditions across the country (www.nohrsc.noaa.gov/nsa/). A wide array of ground, airborne and satellite observations are used to monitor snow conditions. Local weather forecast offices routinely provide flood forecasts, whether or not they're related to snowmelt.

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